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(54) Nestable luggage trolley

(57) Luggage vehicles are known which, pushed together into a stack, can only be shunted when an in each case rear luggage vehicle slightly lifts a part of the luggage vehicle which in each case is in the front. Only then are the automatic brakes of this vehicle eased. A disadvantage is the high expenditure of force which has to be produced when the luggage vehicles are to be pushed inside one another. To achieve this, the invention proposes a manually movable luggage vehicle (1) in which a substantial part of its platform (18) is designed as a cantilever extending in the direction of travel; in which, moreover, openings (29) are provided at the lower ends of the hollow columns (11) in which openings (29) is guided a transverse bar (28), which traverses the distance between the hollow columns (11), and is connected to the brake rods (15), and in which stops (30) are provided between the platform (18) and the chassis frame (4), which stops (30) are intended for deflecting the transverse bar (28) of a luggage vehicle (1') in front, the wheels thereof remaining on the ground, but the brakes being released by the deflection of the bar.

Fig. 1

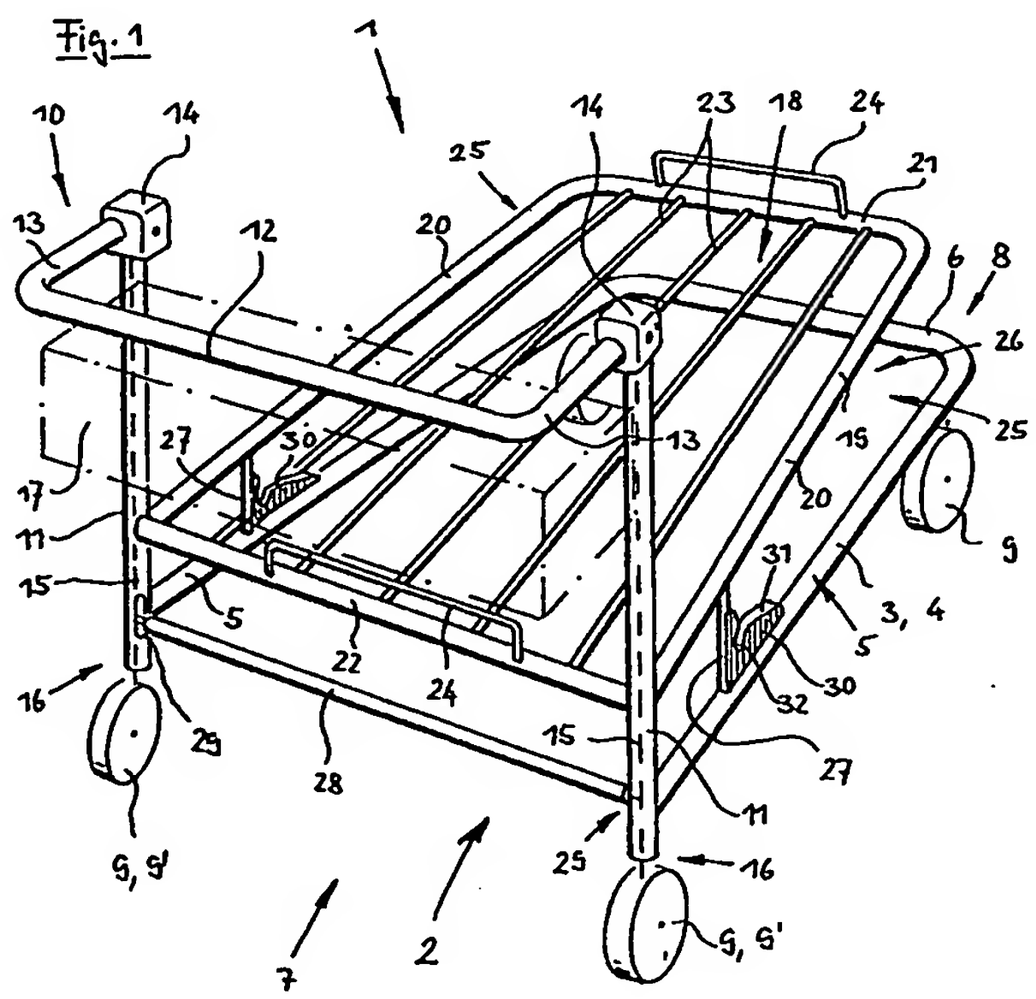

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Fig. 1

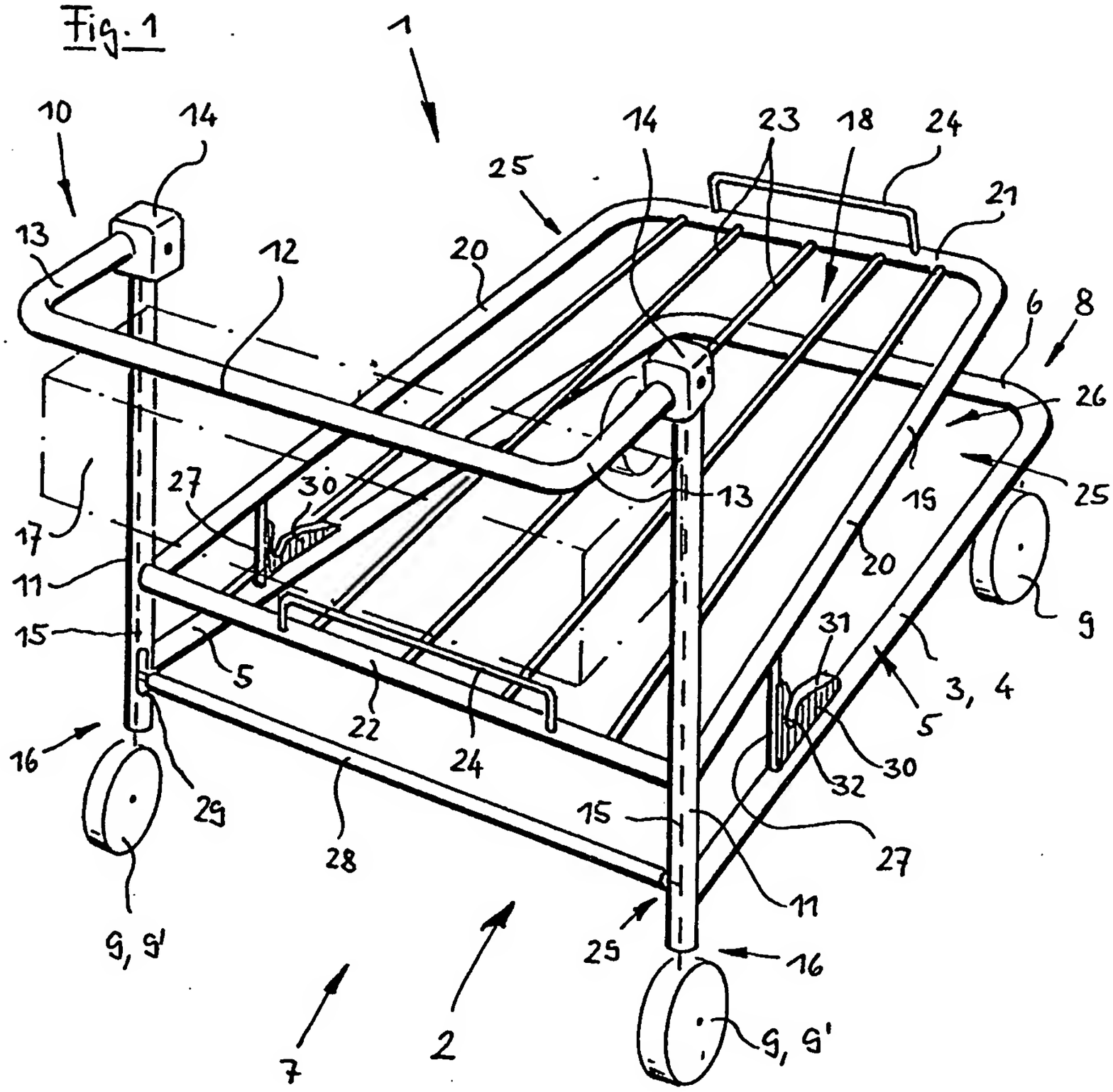
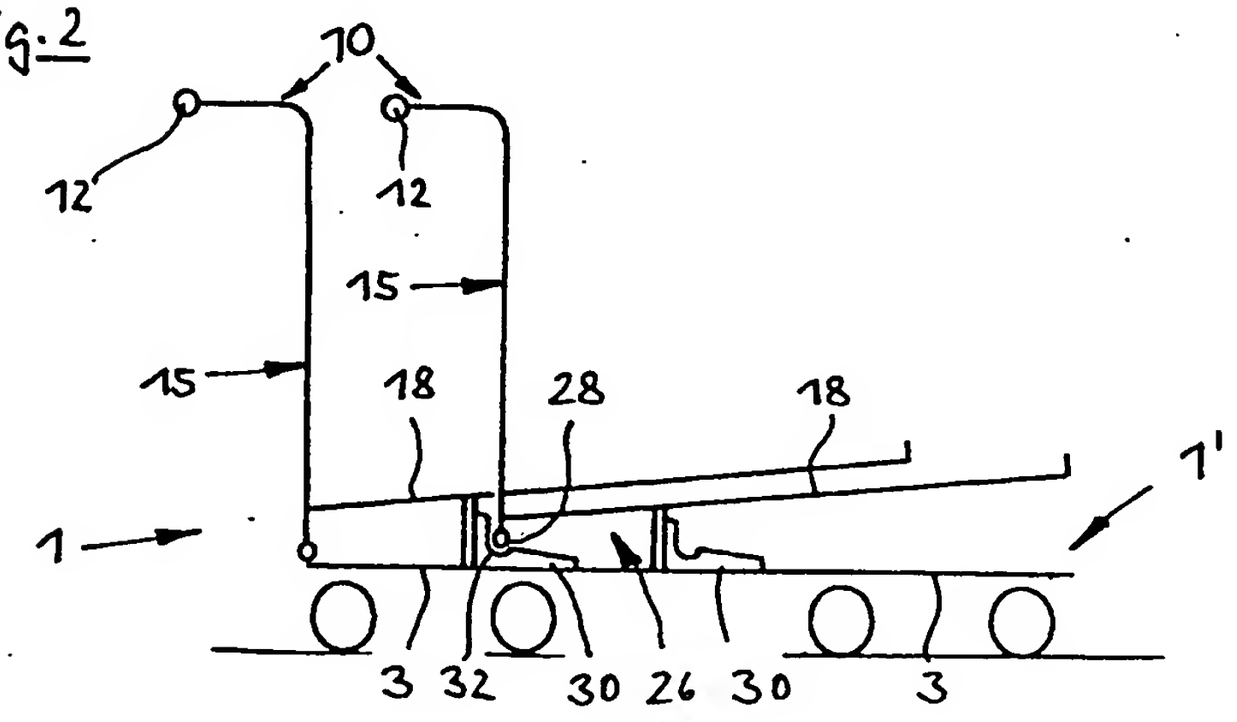

1
10
14
13
12
25
20
14
23
18
24
21
6
8
26
25
19
20
9
31
3, 4
5
30
32
27
11
25
16
9, 9'
7
2
17
11
15
27
30
5
22
24
28
29
16
9, 9'

Fig. 2


10
12'
12
15
15
18
28
18
1'
1
3
32
30
26
30
3

SPECIFICATION

Manually movable luggage vehicle

The innovation relates to a manually movable luggage vehicle, consisting of a chassis, equipped with a platform which rises in the travelling direction, and a sliding device which is arranged at the rear on the chassis, is formed from two upright hollow columns and a handle and is provided with a brake device which can be manually actuated and which automatically produces a braking action when released, and the chassis, the platform, the sliding device and the brake device are designed in such a way that several identical luggage vehicles can be pushed inside one another in space saving manner.

Luggage vehicles of this type are known as so-called "luggage trolleys". They are found at railway stations and at airports. They are used there for conveying luggage. To be able to store these vehicles in space saving manner, they are designed in such a way that they can be pushed inside one another. So that the luggage vehicles do not move off on their own on sloping ground, they have a brake device which comes into action automatically when it is released. Such luggage vehicles are described in greater detail in German Offenlegungs-schriften 2,534,332 and 2,812,050. In addition to their complicated construction, there is a striking disadvantage in that, during the stacking operation of several luggage vehicles, the luggage vehicle which in each case is in front is lifted in such a way by the rear luggage vehicle that the rear wheels of the front luggage vehicle are no longer on the ground. As a result of this measure, an entire stack of luggage vehicles can be pushed manually, because the braked rear wheels cannot come into effect. However, the user of a luggage vehicle who wants to push the vehicle inside a luggage vehicle in front must exert considerable force so that the luggage vehicle in front is also lifted. In practice, because of unwillingness on the part of the user, this laborious and complicated manipulation can result in stacks of luggage vehicles in which the individual luggage vehicles have not been pushed inside one another adequately. This increases the space requirement for unused luggage vehicles.

Now a shopping and transport vehicle in which the brake of the luggage vehicle which in each case is in front is automatically released by the action of the rear vehicle without the front vehicle having to be lifted by the rear vehicle is admittedly known from German utility models 7,882,236 and 8,433,784. This of course saves a great deal of force during the push-in action. But the solution shown in German utility model 7,822,236 cannot really be implemented in the case of the luggage vehicle stated at the beginning, because the transverse bar pertaining to the stop mechanisms and the stops are arranged above the chassis frame, which normally forms an additional deposit area. Applied to the generic luggage vehicles, this would mean that at least the stops would project in an awkward manner into the loading area.

The solution concept shown in utility model 8,433,784 would be more suitable for implementation. But what stands in the way of this is that, in order to put this solution concept into effect, a fairly large space needs to be available beneath the platform and that a relatively large quantity of parts needs to be available, for example two levers with bushes, two rollers, fixing elements and two bearing elements. However, a mass-produced article, as is the case with the luggage vehicle mentioned at the beginning, should be inexpensive.

The object of the innovation is to create a luggage vehicle of the type mentioned at the beginning which is exceedingly simple in its construction and inexpensive to produce and which is designed in such a way that, in the condition in which several identical luggage vehicles are pushed inside one another, all rollers of the luggage vehicles remain on the ground; therefore the luggage vehicles do not need to be lifted.

The object is achieved according to the innovation when:

a substantial part of the platform is designed as a cantilever extending in the travelling direction;
- openings are provided at the lower ends of the hollow columns, in which openings is guided a transverse bar, which traverses the distance between the hollow columns, and is connected to the brake rods, and
- stops are provided between the platform and the chassis frame, which stops are intended for deflecting the transverse bar of a luggage vehicle in front.

Further details which contribute to the solution of the set object can be found in the sub-claims.

It proves to be expedient that the loading surface and the chassis frame, as viewed from the side, form a V-shaped arrangement which is open in a jaw shape in the travelling direction. Moreover, the chassis frame is open at the sliding device and made such that is narrows forwards in the travelling direction. Consequently, several luggage vehicles can easily be pushed inside one another. While the chassis frames are each inserted inside one another during this procedure, the platforms gradually come to lie one above the other. The stops are arranged in the area located between the platform and the chassis frame, whereas the transverse rod provided for brake lifting is located beneath the rear end of the platform. The stops and the transverse bar are therefore arranged in areas where they neither project into the loading area nor otherwise have a disturbing effect anywhere. This gives the luggage vehicle an uncomplicated appearance, and also an exceptionally simple and therefore cost effective manufacture of the luggage vehicle is generally made possible by the V-shaped arrangement of the chassis frame and platform, because either only straight components such as bars, or simply curved components in the form of U-shaped frames need to be welded to one another.

The stops are made from resilient plastic. They therefore have noise-abating properties, whereas

the transverse bar, preferably rotatably mounted about a horizontal axis, is fixed to both brake rods, so that, when several luggage vehicles are pushed inside one another, neither large friction forces need be overcome nor does a great deal of noise develop.

However, a particular advantage should be emphasized that, when several identical luggage vehicles are pushed inside one another, a luggage vehicle in front no longer needs to be partially lifted by the rear luggage vehicle to be pushed in. This makes it much easier to push the luggage vehicles inside one another. Stacks of luggage vehicles which have been pushed inside one another inadequately, as was mentioned at the beginning, virtually no longer arise.

The innovation is described in greater detail with reference to a preferred exemplary embodiment, in which:

Figure 1 shows a luggage vehicle according to the innovation, and

Figure 2 shows two luggage vehicles of this type which are pushed inside one another.

The luggage vehicle 1 shown in Figure 1 consists of a chassis 3 with three or four rollers 9. The chassis frame 4 is open at its rear end 7 in known manner and runs in tapered manner in the travelling direction, that is, the two side frames 5 approach one another as viewed in the travelling direction. Their front ends 8 are connected to one another by a transverse strut 6. Because of this approximately U-shaped plan configuration, the chassis 3 can be pushed inside one another in space-saving manner. A sliding device 10 is provided at the rear end of the luggage vehicle 1, which sliding device 10, also according to known embodiments, consists of two upright hollow columns 11. A bearing housing 14 is in each case arranged on the upper ends of the hollow columns 11, in which bearing housings 14 is mounted a handle 12 which is angled in the opposite direction to the travelling direction, that is, it extends rearwards. The two legs 13 fixed in the bearing housings 14 are connected in articulated manner in each case to a spring-loaded brake rod 15 located in each hollow column 11. The brake rods 15 lead downwards to the rear wheels 9'. Brake parts arranged at the lower ends 16 of the brake rods 15 ensure that the rear wheels 9' are automatically braked in known manner when the handle 12 is released. The handle 12, the spring-loaded brake rods 15 with their brake parts, and also the bearing housings 14 essentially form the brake device. In the example, therefore, the handle 12 must be swivelled to produce a braking action or to release the brakes. Instead of a swivellable handle 12, a rigid handle 12 can also be provided on which a movable brake arm is arranged in known manner which is connected to the brake rods 15.The particular application can determine which form of the handle 12, with or without a brake arm, or other conceivable forms, is finally used. A basket 17 suitable for small hand luggage can be fixed, as shown in the drawing, to the sliding device 10, or more precisely the hollow columns 11. This basket 17 can of course also be used in known manner as a child seat. In the rear lower area 2 of the luggage vehicle 1, the platform 18 is fixed to the hollow columns 11 by welding. The platform 18 extends in rising manner towards the front in the travelling direction. It consists of a frame 19 which is preferably of a narrowing configuration towards the front like the chassis frame 4. However, the platform 18 can also have a rectangular plan configuration. Several straight bars 23 run between the two side frames 20 of the platform 18, starting from the front transverse web 21, which bars 23 are directed rearwards towards the rear transverse connection 22 and are welded there to the latter in the same manner as they are also welded to the transverse piece 21. Upright stops 24 arranged on the transverse piece 21 and on the transverse connection 22 prevent the luggage from falling down. Starting from the hollow columns 11, approximately in the first third of the longitudinal extent of the platform 18, two upright struts 27 are provided on the chassis frame 4 on both sides, which struts 27 help to support the loading surface 18. The part 25 of the platform 18, which part 25 extends further from the struts 27 forwards in the travelling direction, is designed as a cantilever. Thus a jaw-shaped clearance space 26 is created between this part 25 of the platform 18 and the chassis 3, which clearance space 26 is not interrupted by any other supporting means. Viewed from the side, the platform 18 and the chassis frame 4 therefore form a "V". Beneath the rear end of the platform 18 is located a horizontally arranged transverse bar 28 which is connected to the brake rods 15 located in the hollow columns 11. For this purpose, suitable openings 29 are punched into the hollow columns 11, so that penetrations are formed through which the transverse bar 28 is guided with its ends. The transverse bar 28 can be rigidly connected to the brake rods 15. However, a rotatable mounting of the in this case tubular transverse bar 28 on the brake rods 15 is to be recommended. The transverse bar 28 is arranged approximately at the same level as the two stops 30 which are located between the platform 18 and the chassis frame 4, are fixed there and are expediently supported on the struts 27 and on the chassis frame 4. The stops 30 are made from plastic, preferably from polyamide, and have an inclined run-on surface 31 which is provided for the transverse bar 28 of a luggage vehicle 1' in the front and which merges into a depression 32 after a short horizontal intermediate distance.

In Figure 2, two luggage vehicles 1 and 1' according to the innovation are shown in the condition in which they are pushed inside one another. The chassis 3, the sliding devices 10 and the platforms 18 arranged one above the other can be seen. The transverse bar 28 of the luggage vehicle 1' in front is located in the depression 32 of the stops 30 of the rear luggage vehicle 1. This means that the transverse rod 29 of the front luggage vehicle 1' is slightly raised and therefore so too are its brake rods 15. The braking action of the front luggage vehicle 1' is thus neutralized, whereas the

braking action of the rear luggage vehicle 1 is maintained. If the brake of the rear luggage vehicle 1 is released by swivelling the handle 12, the rear luggage vehicle 1 can be pulled out from the luggage vehicle 1' in front. During this procedure, the transverse bar 28 of the luggage vehicle 1' in front shifts slightly downwards and the braking action of the front luggage vehicle 1' comes into effect. The reverse procedure takes place when two luggage vehicles 1 and 1' are pushed inside one another. The stops 30 of the rear luggage vehicle 1 then press the transverse bar 28 of the front luggage vehicle 1' upwards. At the same time, the transverse bar 28 of the front luggage vehicle 1' is located in the clearance space 26 of the rear luggage vehicle 1. The friction which occurs between the stops 30 and the transverse strut 28 when two luggage vehicles 1 and 1' are being pushed together is very small as a result of the rotatable mounting of the transverse strut 28, so that only a relatively slight impact force acts on the front luggage vehicle 1', which impact force is almost dissipated by the mass moment of inertia inherent in the stationary luggage vehicle 1'. The luggage vehicle 1' in front is therefore moved forwards only by an insignificant extent when the luggage vehicles are being pushed together.

It remains to be noted that it is possible in equivalent manner to provide, instead of two stops 30, only one stop 30 which would have to be fixed centrally to the underside of the loading surface 18 with suitable means. Instead of a continuous transverse bar 28, it is also conceivable to arrange in each case one short transverse web on each brake rod on the same axis.

CLAIMS

1. Manually movable luggage vehicle, consisting of a chassis, equipped with a platform which rises in the travelling direction, and a sliding device which is arranged at the rear on the chassis, is formed from two upright hollow columns and a handle and is provided with a brake device which can be manually actuated and which automatically produces a braking action when released, and the chassis, the platform, the sliding device and the brake device are designed in such a way that several identical luggage vehicles can be pushed inside one another in space-saving manner, characterized in that:
- a substantial part of the platform (18) is designed as a cantilever extending in the travelling direction;
- openings (29) are provided at the lower ends of the hollow columns (11), in which openings (29) is guided a transverse bar (28), which traverses the distance between the hollow columns (11), and is connected to the brake rods (15), and
- stops (30) are provided between the platform (18) and the chassis frame (4), which stops (30) are intended for deflecting the transverse bar (28) of a luggage vehicle (1') in front.

2. Manually movable luggage vehicle according to claim 1, characterized in that the stops (30) are supported on the chassis frame (4) and on the struts (27).

3. Manually movable luggage vehicle according to claim 1 or 2, characterized in that the stops (30) are manufactured from shock-absorbing and sound-absorbing plastic.

4. Manually movable luggage vehicle according to one of claims 1 to 3, characterized in that, instead of two stops (30), only one stop (30) is provided beneath the loading surface (18).

5. Manually movable luggage vehicle according to one of claims 1 to 4, characterized in that the transverse bar (28) is rotatably mounted on the brake rods (15) about a horizontal axis.

6. Manually movable luggage vehicle according to one of claims 1 to 5, characterized in that the transverse bar (28) is made as a tube.

7. Manually movable luggage vehicle according to one of claims 1 to 6, characterized in that, instead of a transverse bar (28), in each case a short transverse web is arranged on each brake rod (15).

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